CALIFORNIA DIVISION OF MINES AND GEOLOGY

SUPPLEMENT NO. 1 TO FAULT EVALUATION REPORT FER-97

June 6, 1980

1. Name of faults.

   Pinole and related faults; specifically, westernmost branch of the Pinole fault.

2. Location of faults.

   South-central part of the Mare Island 7.5-minute quadrangle and north-central part of the Richmond 7.5-minute quadrangle, Contra Costa County.

3. Reason for evaluation.

   Supplementary information received following the completion of FER-97, April 2, 1980.

4. List of references.

Bedrossian, T.L., 1980, Fault evaluation report for the Pinole and related faults: California Division of Mines and Geology FER-97.

Bolt, B.A., Stifler, J., and Uhrhammer, R., 1977, The Briones Hills earthquake swarm of January 8, 1977: U.C. Berkeley, unpublished preprint, 24p.

Hart, E.W., 1977 (being revised), Fault hazards zones in California: California Division of Mines and Geology, Special Publication 42, 24 p.

Sims, J.D., Fox, K.F., Jr., Bartow, J.A., and Helley, E.J., 1973, Preliminary geologic map of Solano County and parts of Napa, Contra Costa, Marin, and Yolo Counties, California: U.S. Geological Survey, Miscellaneous Field Studies, Map MF-484, scale 1:62,500.

Wagner, J.R., 1979, Late Cenozoic history of the Coast Ranges east of San Francisco Bay: University of California, Berkeley, unpublished Ph.D. dissertation, 161 p., 11 plates, scale 1:24,000.

Aerial photos:

a. National Archives and Records Services Administration, Washington Collection, Library of Congress Catalog Card No. 75-174520, Special List No. 25, 1973: USDA BUU Series (Contra Costa County, 1939); Flight 8-4-39 (frames 290-15 and 16); black and white, scale 1:24,000.

b. U.S. Geological Survey; CC series; Flight 5-18-65 (frames 24 and 25), black and white, scale 1:24,000.

c. U.S. Geological Survey; EF series; Flight 2-29-48 (frames 85 and 86); black and white; scale 1:28,400.

5. Summary of supplementary data.

Pursuant to the completion of FER-97, a Ph.D. dissertation on the geology east of San Francisco Bay (Wagner, 1979) was brought to my attention. A previously unmapped branch of the Pinole fault is mapped by Wagner (1979) on the Richmond 7.5-minute quadrangle, approximately 1 kilometer southeast of Wilson Point (Figure 1, this supplement). The fault is mapped southeastward for approximately 2 kilometers to the western edge of the Pinole Valley. A southward extending branch of the fault is mapped for approximately 1 kilometer at the intersection of the main trace with the Eastshore Freeway (Figure 1, this supplement).

The main trace of the previously unmapped fault lies on strike and extends southeastward from the westernmost branch of the Pinole fault mapped previously on the Mare Island 7.5-minute quadrangle by Sims and others (1973; see Figure 2 of FER-97). Wagner (1979), however, does not extend the trace of the fault northwestward onto the Mare Island quadrangle.

Figure 1 (this supplement) shows the main trace of the fault mapped by Wagner (1979) to be cutting Quaternary alluvial deposits south of the Eastshore Freeway (Figure 1, this supplement). However, discussions with R. Wagner (personal communication, June 3 and 5, 1980) indicate that there is no evidence for Holocene displacement at this location. According to Wagner, the only evidence of possible recent activity along the Pinole fault was the earthquake swarm of January 8, 1977 near Briones Reservoir, approximately 16 kilometers southeast of Wilson Point (Figure 2, this supplement). Bolt and others (1977, p. 8), however, attribute the Briones Hills swarm to movement on a fault (possibly the Franklin fault) east of the Pinole fault, based on fault plane solutions. No surface fault rupture was observed as a result of the swarm (Bolt and others, 1977, p. 6).

6. Aerial photo interpretations and field observations.

Analyses of 1939 (USDA), 1948 (USGS), and 1965 (USGS) aerial photographs are summarized on Figure 2 (FER-97) and on Figure 1 (this supplement). Although tonal lineaments and saddles in bedrock units may indicate faulting along the trace of the Pinole fault mapped by Wagner (1979), Quaternary alluvial deposits south of the Eastshore Freeway do not appear to be offset by faulting. Field observations along the Pinole and related faults are also summarized on Figure (FER-97). No new field investigations were made for this supplement.

7. Conclusions.

A. According to Wagner (personal communication, June 3 and 5, 1980), the fault mapped across Quaternary alluvial deposits (Figure 1, this supplement) shows no evidence of Holocene displacement.

B. An earthquake swarm near Briones Reservoir in January 1977 was attributed to movement at depth along a fault east of the Pinole fault (Bolt and others, 1977). No surface fault rupture was observed.

C. Aerial photo analyses of the fault traces mapped by Wagner (1979) revealed no geologic evidence for their activity during Holocene time.

D. Faults mapped by Wagner (1979) do not meet the present criteria of being "sufficiently active" for zoning under the Alquist-Priolo Act (see Hart, 1977).

8. Recommendations.

Because there is no evidence of Holocene displacement along branches of the Pinole fault mapped by Wagner (1979), these faults should not be zoned at this time.

9. Supplement report completed on June 5, 1980 by:

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Trinda L. Bedrossian

I agree with recommendation
E.W.H. 6/24/80

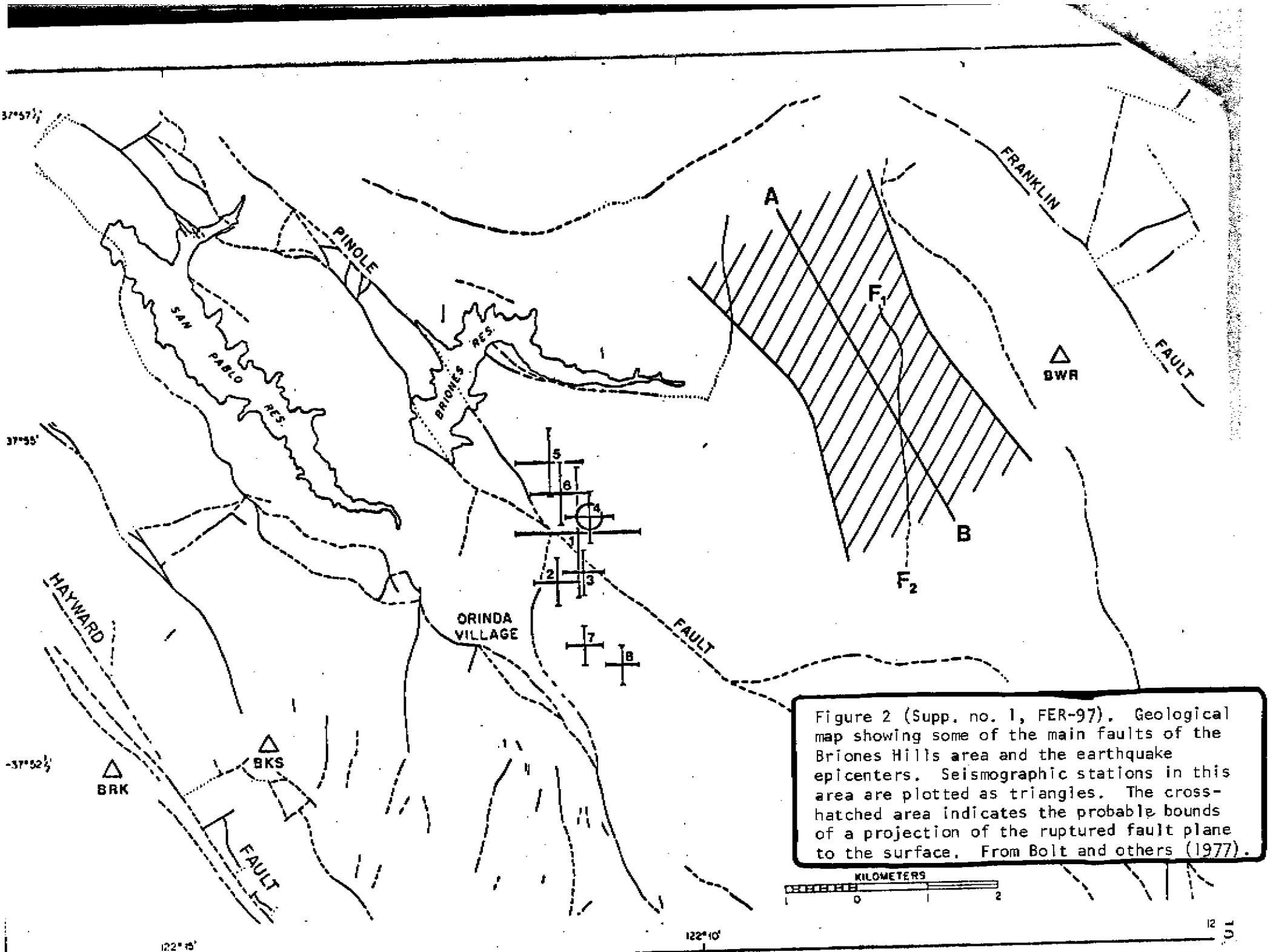

Figure 2 (Supp. no. 1, FER-97). Geological map showing some of the main faults of the Briones Hills area and the earthquake epicenters. Seismographic stations in this area are plotted as triangles. The cross-hatched area indicates the probable bounds of a projection of the ruptured fault plane to the surface. From Bolt and others (1977).

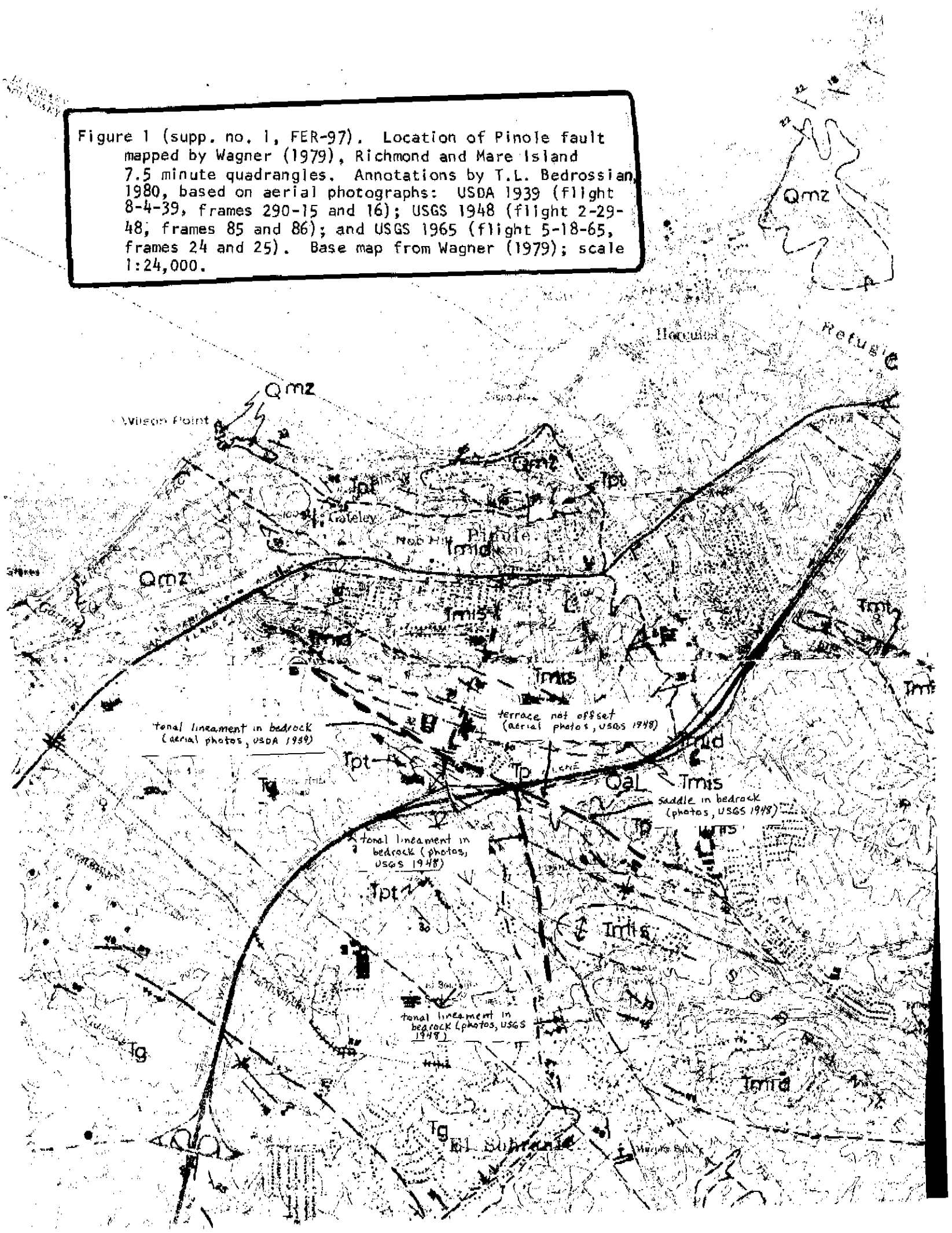

Figure 1 (supp. no. 1, FER-97). Location of Pinole fault mapped by Wagner (1979), Richmond and Mare Island 7.5 minute quadrangles. Annotations by T.L. Bedrossian, 1980, based on aerial photographs: USDA 1939 (flight 8-4-39, frames 290-15 and 16); USGS 1948 (flight 2-29-48, frames 85 and 86); and USGS 1965 (flight 5-18-65, frames 24 and 25). Base map from Wagner (1979); scale 1:24,000.